REMARKS

In a general sense, Sanderford is about a digital communication system. In our previous responses, we have distinguished the present invention from the different technical field of digital communications, as opposed to satellite navigation. The examiner, at least implicitly, seems to have accepted that distinction. Sanderford suffers from precisely the same problems just as much as any of the other digital communication systems prior art cited by the examiner, as opposed to being satellite navigation system based.

The examiner appears to be attempting to use the assertion that the endpoints are location aware, i.e., have a GPS capability, as a basis for migrating the technical teachings of Sanderford from its endpoint context to a satellite navigation context. Taken alone, this is unjustified since there is a complete absence of any technical motivation for one skilled in the art to apply the modulation technique to a satellite navigation system.

Furthermore, it can be appreciated from Fig. 37, and the description at paragraphs [0288] and [0289], that a 16QAM modulator is described. It can also be appreciated that the output from the modulator (encoder) is a 7FSK modulating waveform. And it can be appreciated that such a waveform is an FM waveform in which the frequency of the carrier is varied according to the 4 bits of the symbols of the QAM, as will be seen from paragraph [0028], which reads:

> The 7FSK modulating waveform is made up of a sequence of 4 bit symbols. Each of the 4 bits of a symbol corresponds to 1 of 7 frequencies of the frequency modulator E280. The frequency modulator E280 will send the frequency corresponding to each bit of the symbol for a 1 bit period.

It can therefore be appreciated that the modulating waveform operates at the "bit" level, "is made up of a sequence of bit symbols", and that a "bit" corresponds to a frequency, "each of the 4 bits ...corresponds to 1 of 7 frequencies". Therefore, the modulating waveform, i.e., waveform E290, is not a multi-level waveform as claimed. It can be appreciated that the modulation occurs at the "bit" level. While a "bit" stream is a multi-level signal, i.e., a binary signal, it is not a multi-

level signal as claimed, i.e., "at least one subcarrier modulation signal [that] comprises a number, m, of amplitude levels, where m>2". It is clear that m=2 in Sanderford.

Throughout Sanderford, there are references to digital communication systems, as can be appreciated from the emphatic language of paragraph [0003], which reads "..., the invention is directed towards communication systems...", and, for example, paragraph [0036] that, again, indicates that the "invention" per se "relates to a communication system".

In contrast, embodiments of the present invention are directed to a "method of generating a navigation transmission signal in a navigation system", which has nothing in common with Sanderford, but for the language "method of generating a ... transmission signal in a ... system". While Sanderford discloses modulation to produce a transmission signal, it does not undertake such modulation to generate a "navigation transmission signal". Furthermore, the "modulating waveform", to use the language of Sanderford, is a binary waveform since it operates at the bit level to change the frequency of the transmission signal and it, therefore, does not have more than two amplitude levels.

The examiner has made the assertion that one skilled in the art would, in effect, combine the technical teachings of paragraph [0222] and paragraph [0289] thereby rendering the present claim obvious. Our position is that the mere reference to a GPS system cannot justify one skilled in the art seeking to force the technical teaching of paragraph [0289] into a GPS context at all. Further, the reference to GPS systems in paragraph [0222] is a reference to GPS receivers that provide position information, that is, they receive GPS signals and do not transmit signals. Again, there is no technical motivation for one skilled in the art to introduce a transmission signal into a GPS receiver at all, let alone the particular 7FSK transmission signal described in paragraph [0222]. Even making such a modification to the technical content of Sanderford, one skilled in the art would end up with a GPS receiver that can transmit communication data over a relatively limited range ("10 mile nominal separation", paragraph [0204]). One skilled in the art would not end up with a navigation transmission signal as claimed.

There appears to be no suggestion that the location technology would benefit from the use of any part of the alleged Sanderford invention. Indeed, the only purpose is to 'improve system capacity and reliability'. The link between the location technology and that of the Sanderford alleged invention is tenuous at most. Indeed, it is unclear how one of ordinary skill in the art would use the alleged Sanderford invention in an Inertial navigation System or a Star based location system.

Furthermore, paragraph [0222] provides no motivation to use the communication signal structure for a navigation signal. Moreover, there are several reasons why such a combination could not be successful. First the data symbols (in a communication system) are a priori from an unknown sequence of states. In a navigation or location system, the sequence of states has to be known *a priori* so that a replica can be produced at the receiver in order for a ranging signal to estimate the range between transmitter and receiver. This condition cannot be fulfilled by a communication system as described by Sanderford. This remains true even for stellar location systems, where the timing signature of, for example, a pulsar is used as the reference code.

Still further, the examiner will recall our previous extensive observations relating to Gabor bandwidth. If one skilled in the art attempted to use an FSK modulated signal as a ranging signal, a number of significant disadvantages would follow, which include very poor instantaneous Gabor bandwidth. This would lead to very poor tracking accuracy and highly degraded performance in the presence of multipath interference. For such reasons, these types of signal would offer degraded performance compared with present navigation system arrangements. Furthermore, such signals would be likely to interfere with other ranging transmissions if the FSK range covered a significant part of one of the protected RNSS bands. There is no teaching in Sanderford to control the leakage from one transmission into a receiver adapted to receive the spectrum from a different transmission.

Finally, the examiner appears to have overlooked the fact that Sanderford seems to positively teach away from using satellite systems, as can be appreciated from, for example, paragraphs [0017] and [0020]:

> [0017] A satellite's greatest advantage, range, is also a weakness. As the range (footprint) increases, the number of endpoints in view increases quadratically, and so does required bandwidth. A competitive satellite system would require approximately 200 MHz of bandwidth to equate to 500 KHz of terrestrial base stations. This will considerably impede satellites from servicing dense applications that require updates every 15 minutes. In addition, present satellite systems are two-way (a requirement for licensed frequency dynamic allocation). This creates a permanent three times or greater cost disadvantage for such systems (present satellite transceivers have at least a 20 times cost disadvantage due to other factors such as very tight ppm budgets). Further, the required update rates would yield unacceptable battery life.

> [0020] The inventors of the present invention have recognized that conventional approaches to remote monitoring are inadequate from both a technical and a cost effectiveness perspective. Accordingly, an object of the present invention is to address these identified inadequacies, as well as others, to provide a system for remote monitoring that has advantageous performance characteristics, is reliable, and is cost effective making it an option for a vast range of potential applications for remote monitoring. [emphasis added]

Thus, the invention cannot be obvious in light of Sanderford, other than with the improper application of the most extreme hindsight and technical modification.

For at least the reasons stated above, we believe that the claims are in condition for allowance and therefore ask the Examiner to allow them to issue.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Please apply any charges not covered, or any credits, to Deposit Account No. 08-0219, under Order No. 2001145.00120US1 from which the undersigned is authorized to draw.

Respectfully submitted,

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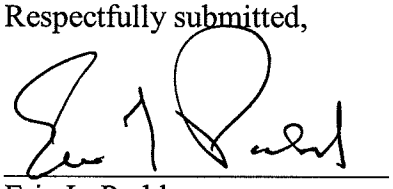

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